

molecules of Brown, are commonly seen, and have been thought by many to be reproductive organs.

In conclusion, the author adverted to the intimate resemblance which existed between the organisms of the animal and vegetable kingdoms at these parts of their scales respectively, insomuch that they would appear to diverge from one common point, at which would stand a being neither vegetable nor animal. *Spongilla* appeared very near this. The author had found that this organism, towards the end of the dry season, develops almost as much starch as plants, yet there is not a particle of starch to be found in the composition of its capsule and ovules. It subsists on nutrition brought into its cell through endosmosis, yet there is no trace of cellulose in its cell-wall. It is endowed with polymorphism; but the protoplasm of the cell in many plants, to say nothing of Algæ, has as much, though it cannot move beyond the cellulose covering in which it is incarcerated any more than the sponge-cell while the latter is enclosed *en masse* within the general *pellicula*. It is true that it possesses the *vesicula*, but Cohn has shown that this exists in even some of the swarm-cells of *Confervæ*. It is not impossible, from the great plurality of the *vesiculæ* in the Rhizopoda (in which class *Spongilla* should be included) and the activity with which they perform their peculiar function, that the excretory currents of the canals should be thus produced. Mr. Bowerbank had discovered cilia on them to assist in this office, but zoospores move about by the aid of cilia, and in the spore or macrogonidium of *Edogonium* these are very numerous. The *granules* of *Spongilla* contain a yellow colouring material, like endochrome, and when *Spongilla* becomes green, it appears to be caused by a deepening of this colour. So that after all, the difference between the lower organisms of the animal and vegetable kingdoms becomes so slight, that, as Nägeli and Cohn have observed, chemical reagents alone can determine the point; and even then, the transition, in some of them, of one vital product into another during the cycle of their existence, makes them, according to this test, at one time a vegetable and at another time animal; until, it seems, that there must be a point at which both are equally combined.

ZOOLOGICAL SOCIETY.

January 23, 1855.—Dr. Gray, F.R.S., Vice-President, in the Chair.

CHARACTERS OF SIX NEW SPECIES OF THE GENUS THAMNOPHILUS. BY PHILIP LUTLEY SCLATER, M.A.

1. THAMNOPHILUS TRANSANDEANUS.

Supra niger; subtus albus; tectricibus alarum superioribus et caudæ inferioribus nigris albo terminatis; cauda nigra rectricibus duabus utrinque extimis macula parva terminali alba.

Long. tota 8·1, alæ 3·7, caudæ 3·2 poll.

Hab. in rep. Equatoriana, Guyaquil. Mus. Brit.

Obs. Similis *Thamnophilo majori*, sed tectricibus subcaudalibus nigris albo terminatis et rectricibus non albo guttatis.

2. *THAMNOPHILUS LEUCHAUCHEN*.

♂ *Pileo cristato cum lateribus capitis et gutture antico ad medium pectus nigris; nucha, cervice laterali et corpore subtus albis; dorso murino-brunneo; alis caudaque nigris albo limbatis; reetricis unæ utrinque extimæ pogonio externo medio et omnium apicibus albo maculatis; rostro et pedibus nigris.*

♀ *Crista ferruginea; subtus ochracea, gutture nigro striato, lateribus capitis et nucha ochraceis nigro mixtis.*

Long. tota 6·4, alæ 2·8, caudæ 2·5.

Hab. in Peruv. Orient., Chamicurros. Mus. P.L.S.

Obs. Affinis *Th. atricapillo*, Vieill., sed rostro minore, lateribus cervicis et corpore subtus albis neque cinereis, dorso clariore brunneo et gutturali nigro non in ventrem producto distinguendus.

3. *THAMNOPHILUS ALBINUCHALIS*.

♂ *Supra murino-brunneus; nucha late alba; dorsi medii pennis albo mixtis; capite summo cristato nigro; alis fuscis, tectricibus albo limbatis; cauda nigra, reetricum omnium apicibus et unæ utrinque extimæ margine externo albo maculatis; subtus albus; gutture et pectore antico nigris; capitis lateribus albo mixtis.*

♀ *Supra brunnescentior, capite et cauda tota rufo-ferrugineis; nucha et corpore infra ochraceis.*

Long. tota 6·5, alæ 3·2, caudæ 2·5.

Hab. in rep. Equatoriana, Guyaquil et insula Puna. Mus. Brit.

Obs. Species a *Thamnophilo atricapillo* nucha alba et colore corporis inferi albo nec schistaceo, a *Thamnophilo leuchauchene* dorso albo mixto, crassitie majore, et nucha candidiore distinguenda.

4. *THAMNOPHILUS MELANONOTUS*.

Niger; interscapularibus albo mixtis; dorso postico cinereo; abdomine cinerascenti-albo; alis nigris albo marginatis; cauda nigra, reetricibus omnibus apice et extima utrinque laterali etiam pogonio externo medio albo maculatis; rostro et pedibus nigris.

Long. tota 6·5, alæ 3·0, caudæ 2·5.

Hab. in Nova Grenada, Santa Martha. Mus. P.L.S.

Obs. Affinis *Thamnophilo atricapillo*, sed dorso nigro.

5. *THAMNOPHILUS NIGROCINEREUS*.

♂ *Cinereus, capite toto cum dorso summo et gutture nigris; interscapularibus basi albis; alis caudaque nigricantibus, albo limbatis; retrice una utrinque extima media albo notata; rostro et pedibus nigris.*

♀ *Rufo-brunnea; gula et ventre medio albescentioribus; alarum tectricibus secundariisque et cauda sicut in mari albo notatis.*

Long. tota 5·75, alæ 3·8, caudæ 2·4.

Hab. in Brasilia boreali, Para. Mus. Brit. et P.L.S.

Obs. Similis *Th. nævio* sed multo major; rostro fortiore et gutture nigro.

6. THAMNOPHILUS CÆSIUS.

Lanius cæsius, Cuv. in Mus. Paris.

♂ *Nigro-plumbeus; pileo cristato gulaque nigris; tectricibus alaribus anguste albo limbatis; cauda nigricante unicolore; rostro pedibusque nigris.*

♀ *Grisescenti-brunnea, crista nigricante; capitis lateribus, tectricum alarum marginibus et corpore subtus rufis; rostro nigro, mandibula inferiore basi et pedibus pallidis.*

Long. tota 5·5, alæ 3·25, caudæ 2·25.

Hab. in Guiana Britannica. Mus. Parisiensi et P.L.S.

March 13.—Dr. Gray, F.R.S., Vice-President, in the Chair.

NOTES ON THE HABITS OF SOME INDIAN BIRDS. PART VIII.
BY LIEUT. BURGESS.

Family STRUTHIONIDÆ.

Genus OTIS.

OTIS NIGRICEPS (Vigors). BLACK-HEADED BUSTARD.

This fine Bustard is found in flocks, varying in size, in the open plains of the Deccan, preferring the dry grassy and stony grounds to others. It grows to a large size; one fine male which I measured was 7 feet across the wings, and 46 inches from the tip of the beak to the end of the tail. This Bustard may almost be said to breed all the year round. I have had an egg brought to me in February, another on the 4th May, containing a young bird. A gentleman on the Revenue Survey told me that he had seen a young Bustard, covered with down, in the early part of October. I have had a young bird brought to me late in November, as well as eggs in November and December. The female generally lays but one egg. A. F. Davidson, Esq., Superintendent of the Ahmednuggur Revenue Survey, told me a curious habit of the male Bustard. He says, "About breeding time the male is fond of mounting some elevated spot, and then strutting about with the tail erected and spread, the wings drooping, and the pouch in the throat inflated with air, and looking like a large bladder; under the hillock where the male was thus displaying himself were several young ones." In corroboration of this, a boy told me on the 17th May 1850, that about four days previously he had seen a Bustard, with a white-looking bag hanging below the neck. I see in Dr. Jerdon's Catalogue, that he gives an extract from Mr. Elliot's notes to this effect; speaking of the cock Bustard, he says: "He was strutting about on some high ground, expanding his tail, ruffling his wings, and distending his neck and throat, making the feathers stand out like a ruff." I do not find it recorded that the large Bustard of Europe (*O. tarda*) has this habit of showing himself off during the breeding season. The egg of the Black-headed Bustard varies in size; the one sent with this paper measures $3\frac{3}{10}$ ths in. in length, by $2\frac{3}{10}$ ths in. in width. It also varies in colour; the

general colour is a brownish olive, dashed with pale brown. One egg which I had was of a nearly uniform palish blue. The egg now sent was found in a grassy spot on 18th December. As everything relating to this noble bird is interesting, I give a description of a young one brought to me on 28th December 1849. It stood about 10 inches in height; its beak was of a dirty whitish colour, nostrils large; irides clear pale hazel, and eyes very large; back mottled, very much as in the old birds, as also the wing feathers; front of the neck pale yellowish-brown, with a dark streak running down the sides; legs dull yellowish-white, feet the same, knee-joints very thick; there was down on the neck. This was quite a young bird, very feeble on its legs, and barely able to stand. The Black-headed Bustard utters, when frightened, a harsh barking note. Its flight is like that of the Heron, a steady flight, sustained by the continued flapping of its large wings.

OTIS AURITA (Lath.). FLORIKIN.

I have not met with the Florikin sufficiently often to allow me to enter into the argument as to whether the Black Florikin is the male bird in its breeding plumage, or a distinct species from the common brown Florikin, but Dr. Jerdon's arguments in his "Illustrations of Indian Ornithology," appear conclusive, that the black and brown are one and the same bird in different states of plumage. But this point might soon be set at rest, by sportsmen and ornithologists in India ascertaining whether the black-plumaged birds are ever met with during the cold weather and spring. That the male of the Little Bustard (*Otis tetrax*) should to a certain extent assume this black plumage during the breeding season, affords strong ground for the supposition that the Black Florikin is the male in his nuptial dress. The Florikin breeds during the end of the monsoon, laying three eggs of a dark olive-green colour, spotted and dashed with light brown, $1\frac{2}{10}$ ths in. in length, by $1\frac{5}{10}$ ths in. in width, the greatest width being about the centre. The egg now sent was procured with two others early in September. An officer, who was out shooting, put up a Florikin and killed it, and on going to the spot where she rose, found three eggs. I had two specimens of the Florikin sent to me, both males, one in beautiful black plumage on 2nd October, the other in the brown plumage on the 4th February.

Family COLUMBIDÆ.

Genus COLUMBA.

COLUMBA CENAS. BLUE PIGEON.

This Pigeon is very common in the Deccan, inhabiting holes in old forts, walls, temples and wells. It breeds during the cold season, laying two white eggs. Holes and ledges in wells are its favourite resorts for breeding. The egg measures $1\frac{4}{10}$ ths in. in length, by 1 inch and nearly $\frac{2}{10}$ ths in width, and is of a clear shining white. An egg is sent with this paper; it was taken from a well on the 8th December.

Genus TURTUR.

TURTUR CAMBAYENSIS.

Of this Dove, Dr. Jerdon says in his notes,—“This little dove abounds over most of India, both in low jungles and near villages and cantonments, being found, especially towards the north, in every garden, and frequenting stable-yards, houses, &c.” It is, I believe, the same as the small Dove to which—not knowing that it had been previously named—I gave the name of the Vinous-necked Turtle, on account of the colour of its neck. If this be the case, it breeds during the month of March, building its nest in low bushes, and laying two white eggs, rather more than $\frac{9}{10}$ ths of an inch in length, by nearly $\frac{8}{10}$ ths of an inch in breadth.

TURTUR RISORIA.

This Dove is considerably larger than the last, and is easily distinguished by the white crescent on its neck, like the Wood Pigeon of this country. It abounds in every place; amongst the prickly-pear hedges and thickets near villages, in groves of babool trees, and bushes. Its half plaintive, half laughing note, is heard as soon as it becomes light, and if the trees over your tent happen to be its resort, it is anything but conducive to sleep. This Turtle breeds during the cold season, building in low babool trees; its nest is composed of a few twigs and pieces of grass. It lays two white eggs, $1\frac{2}{8}$ ths in. in length, by rather more than $\frac{9}{10}$ ths in width.

Order GRALLATORES.

Family ARDEADÆ.

Genus GRUS.

Subgenus ANTHROPOIDES (Vieillot).

GRUS VIRGO. DEMOISELLE CRANE.

This Crane visits the Deccan during the cold weather, but sometimes remains as late as May. I saw a large flock of them on the river Seena, near Waterphul, as late as 24th May, and was told that one had been brought into the cantonments of Ahmednuggur as late as 12th June, but I never heard of any remaining to breed. It would be most interesting to find out their breeding haunts, their manner of nesting, and the number and colour of their eggs. The greater portion leave the Deccan at the end of March or beginning of April, and return at the end of November. They feed in the grain fields, retiring to the larger rivers about ten o'clock, where they may be seen standing in large flocks in the shallows.

Genus ARDEA.

Subgenus ARDEA.

ARDEA CINEREA (Lath.). COMMON HERON.

A tolerably common bird in the Deccan, frequenting tanks and rivers. I found two nests in a tall peepul tree on the 27th February;

one contained the egg sent with this paper, the other was a nest just finished, and contained no eggs. This bird is considered, I believe, to be identical with the English Heron; it most probably therefore lays four or five eggs, as Mr. Yarrell states that the English Heron does. The egg is a uniform sea-green colour, $2\frac{4}{10}$ ths in. in length, by 1 inch and rather more than $\frac{7}{10}$ ths in width.

MISCELLANEOUS.

On the Mode in which the Tachinæ escape from their Pupa-cases and from closed situations in which they often occur. By Dr. REISSIG.

AMONGST the phænomena of insect-life few things are more remarkable than the power possessed by soft, newly-developed flies, such as the *Tachinæ*, of breaking not only out of the hard larva-skin, but also out of the closed situations in which these are generally found, as, for instance, from the galleries and pupa-cells of *Saperda populnea* and *Cryptorhynchus lapathi* in wood, of *Tortrix resinana* in resinous galls, &c.

To explain this process it has often been supposed that the hardened larva-skin is softened by the insect when about to escape by means of fluid, or that the aperture was prepared by the larva before its change to the pupa state. The author however states, that according to his observations neither of these suppositions is correct; the margins of the aperture through which the fly escapes are evidently broken in a manner which could not be the case if the skin were softened by the agency of a fluid, and he was never able to detect any traces of a prepared means of exit. He has therefore come to the conclusion that the dried larva-skin is burst by the fly, and his observations have proved that this is done in the way which he describes as follows:—"The fly when about to escape can convert its head into a most wonderful apparatus, acting in the manner of a hydraulic press, and by this means not only burst its immediate envelope, but also overcome any obstacles which may lie in its way to the open air."

His observations were made on the following species of *Tachina*: *T. gilva*, Hrtg., from *Lophyrus pini*; *T. pilipennis*, Fall., from the resinous galls of *Tortrix resinana*; *T. flaviceps*, Rtzbg., from the pupæ of *Noctuæ*; *T. fera*, Linn., from the dried larva of *Noctua piniperda*, &c.; but especially upon *T. bimaculata*, Hrtg., from the cocoon of *Lophyrus pini*. His results are as follows:—

In *T. bimaculata* he first observed that both at the moment of its escape and for some time subsequently the fly possesses the power of converting the head into a nearly perfect globe, the diameter of which is considerably greater than that of the body.

The surface of the globe consists of the slightly translucent pergamentaceous skin, which is folded together very beautifully in the *Tachinæ* from the eyes to the mouth, and this is extended to the form described by a thin fluid.